MEG Experiment

Status and prospects

Our goal:

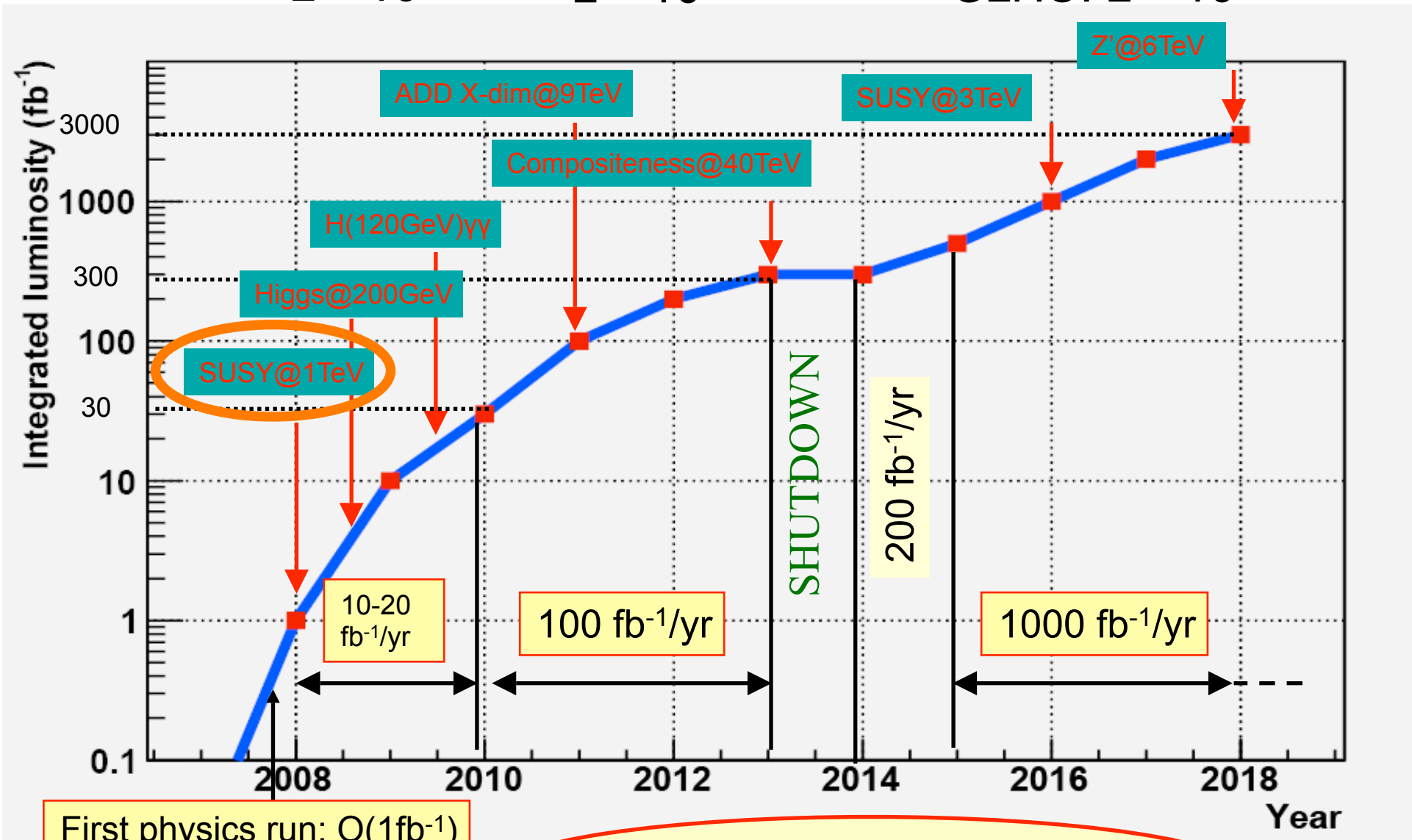
A “significant” result before any LHC discovery

presented last year

Michel Della Negra
CMS week (Sep.2005)

LHC Luminosity Profile

$L = 10^{33}$ $L = 10^{34}$ SLHC: $L = 10^{35}$



presented last year

MEG

Publish in 2008
the “significant” result

Full data taking in 2007

Start data taking in 2006
to fully test the whole experiment

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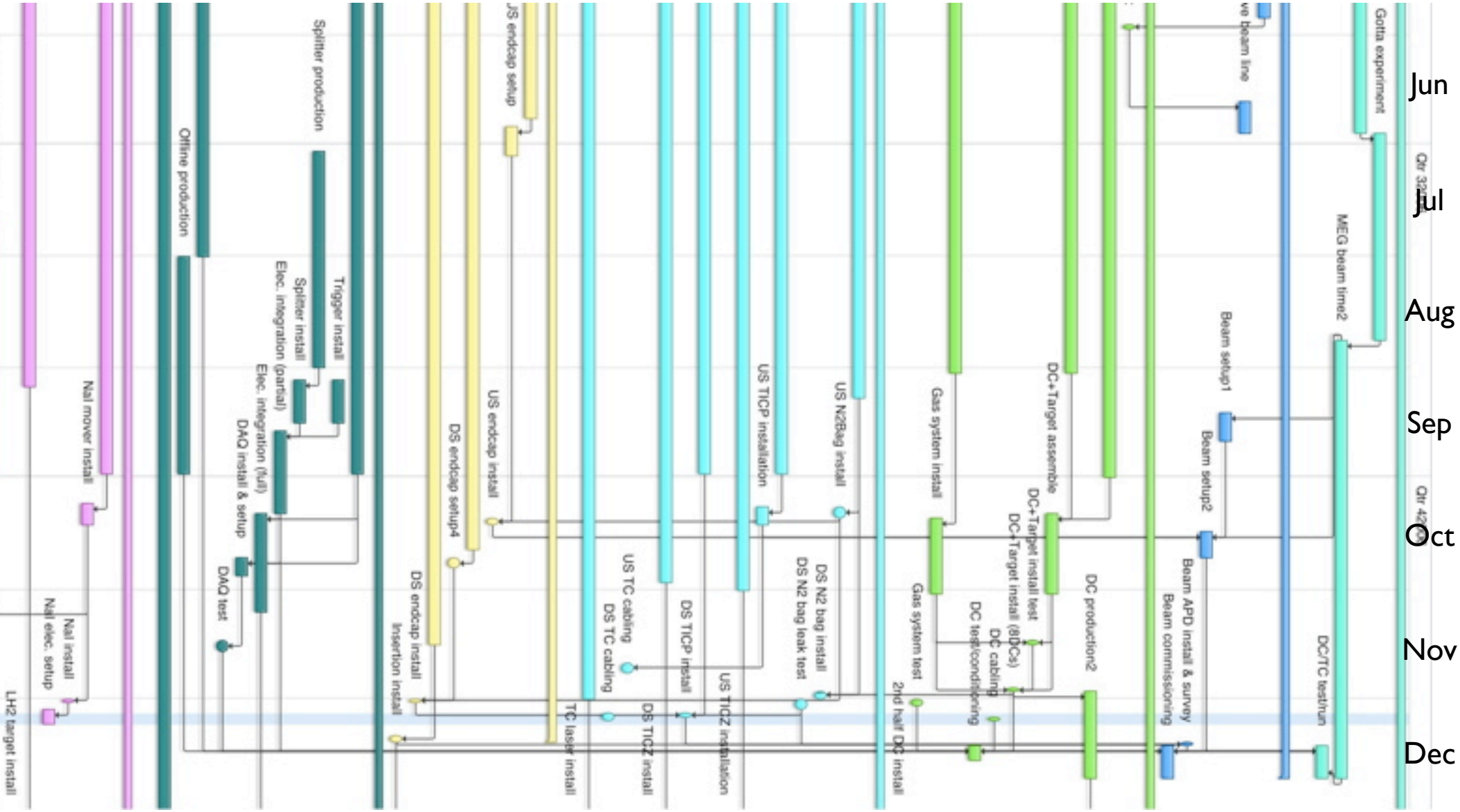
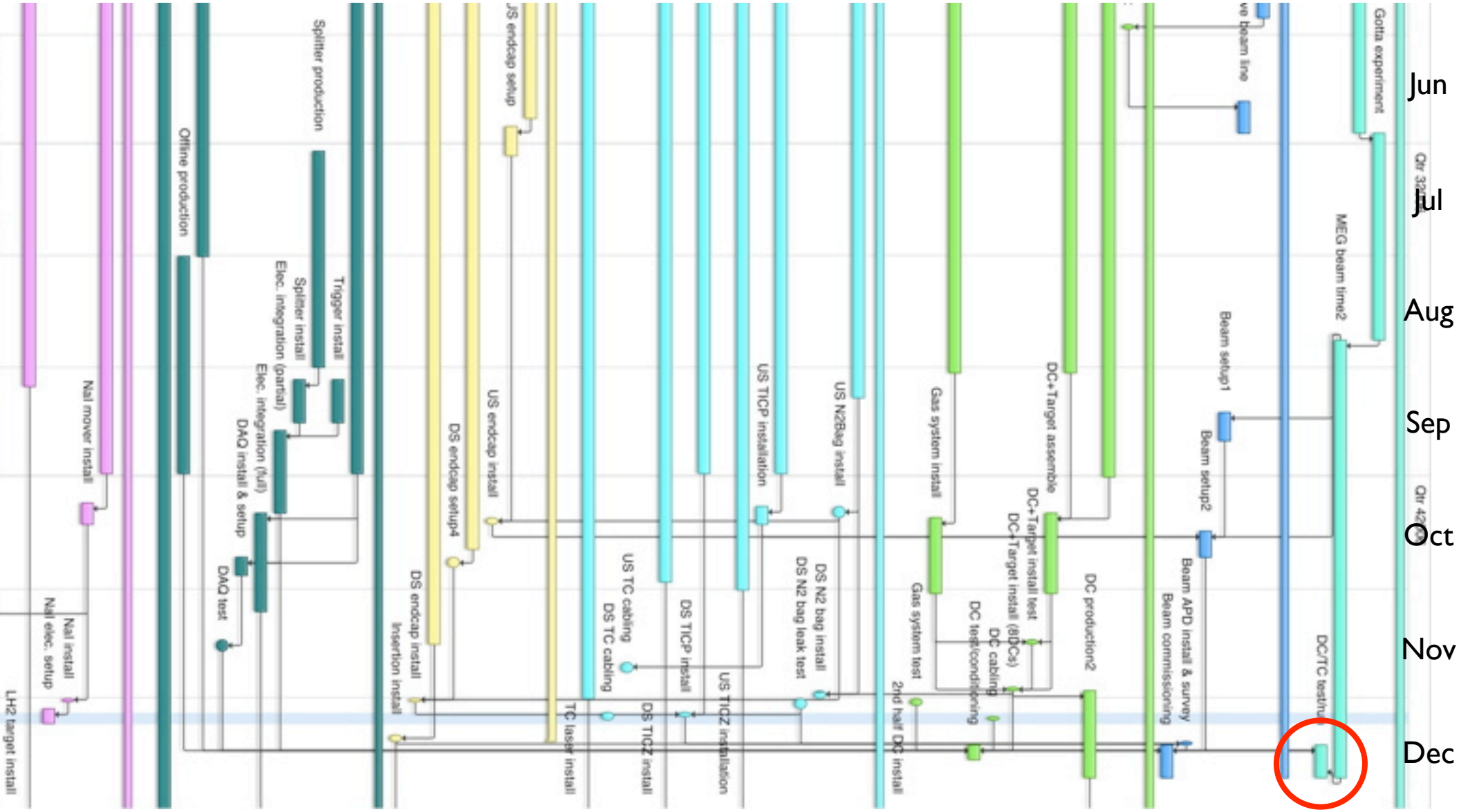
MEG schedule 2006



- Installation coordination by Wataru
- Run coordination by Malte

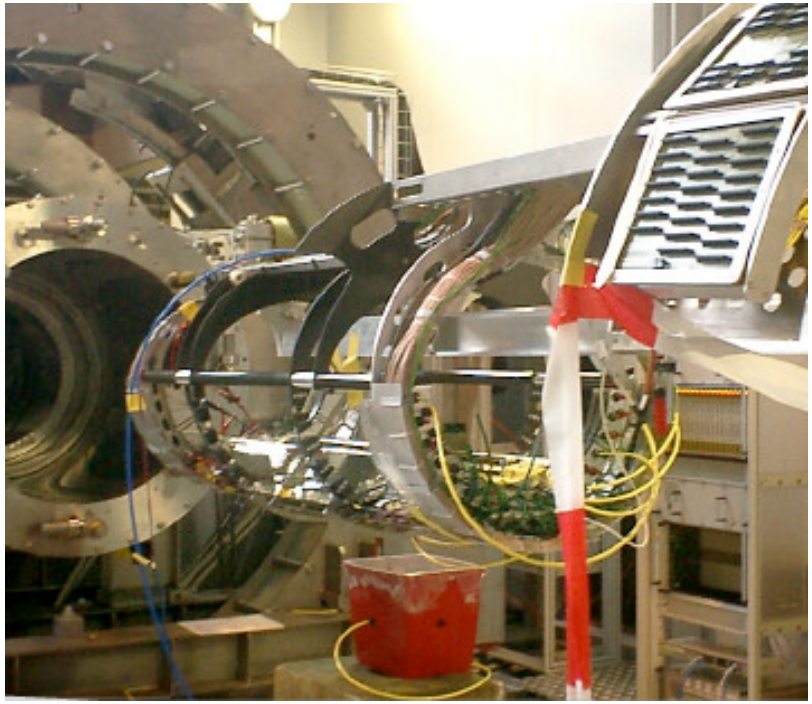
MEG schedule 2006



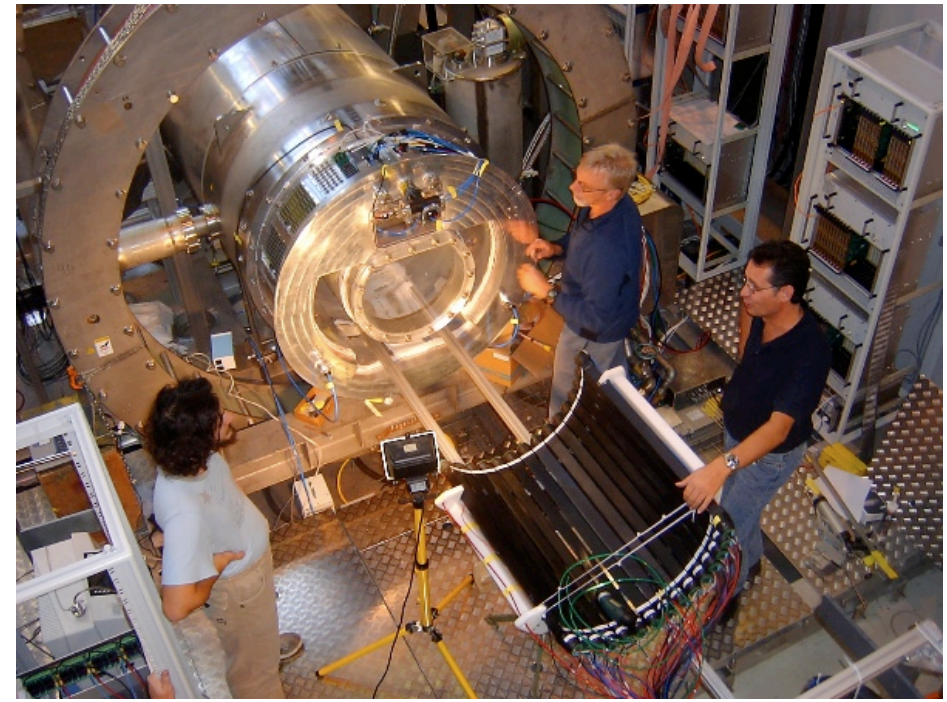
DC+TC Run

- Installation coordination by Wataru
- Run coordination by Malte

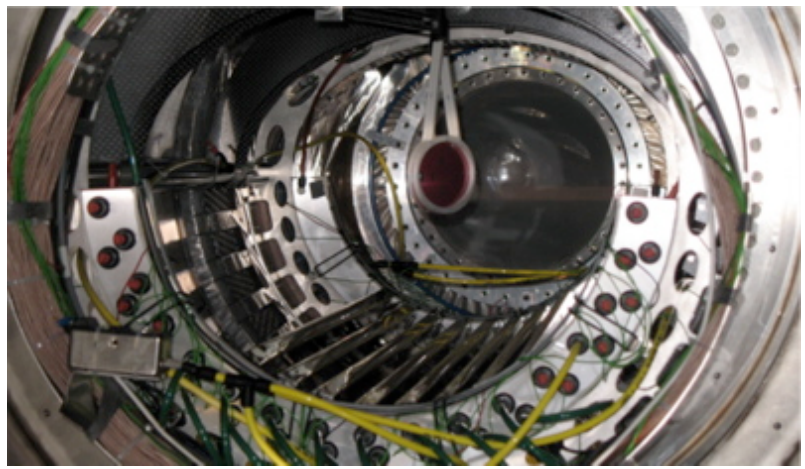
Detector Installation



Drift Chambers (8 out of 16)



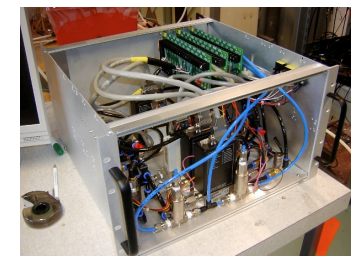
Timing Counters (bars, not fibers)



Stopping Target

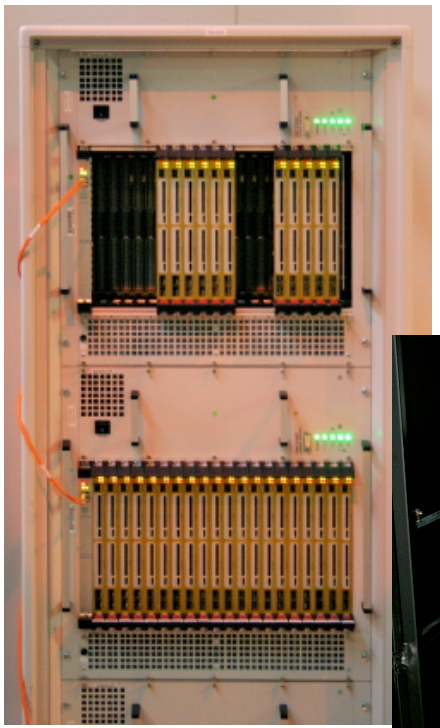
Gas Control System (Cobra+DC)

N_2 Bag



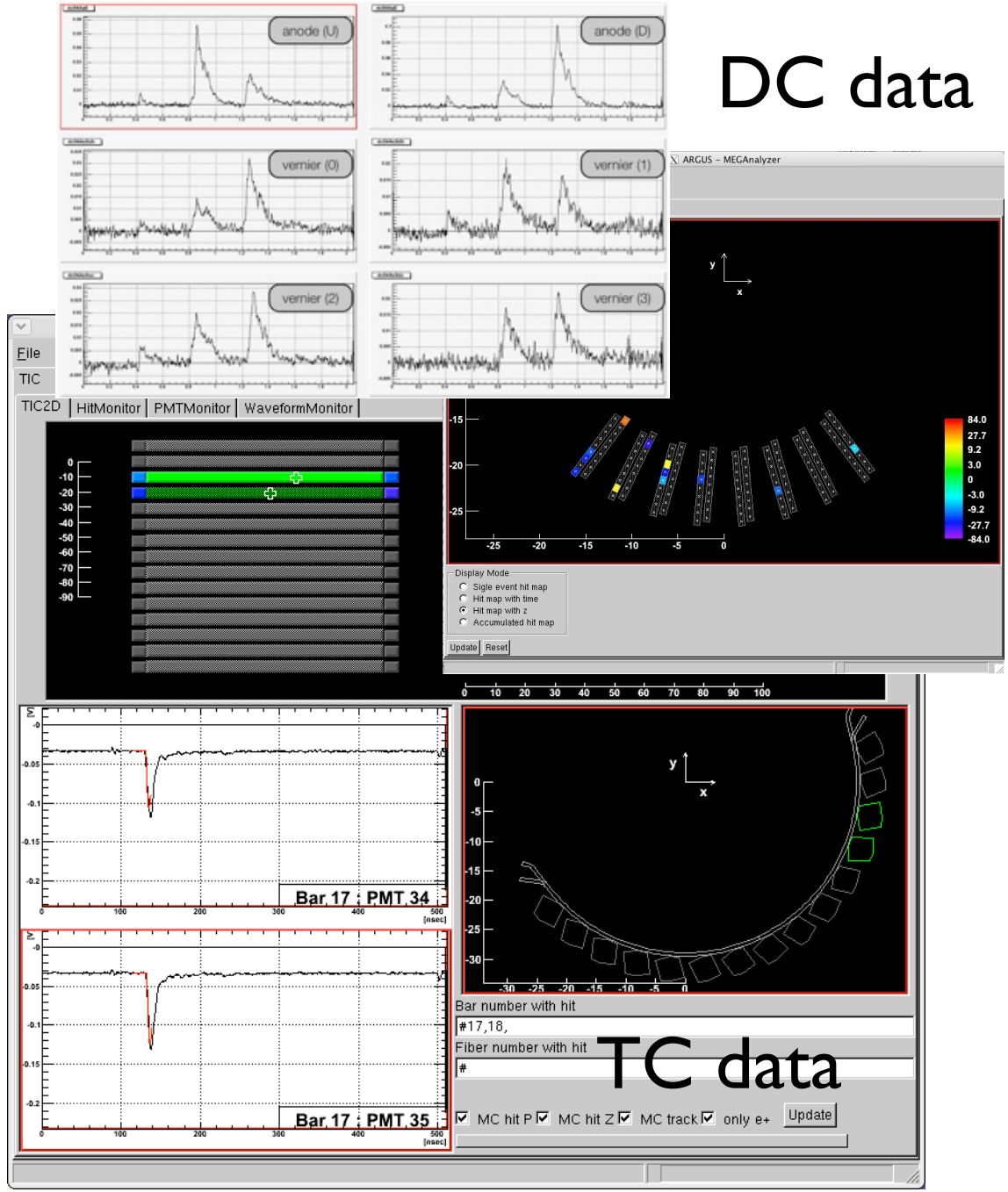
Data Acquisition

Trigger & Splitter



Waveform Digitizer (DRS)

Online PCs



DC data

TC data

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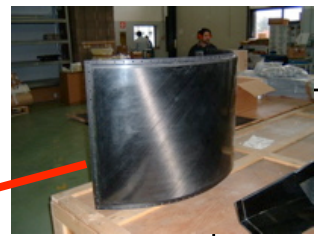
without LXe detector

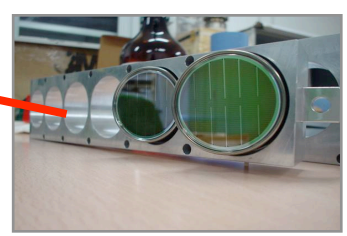
Status of the LXe detector

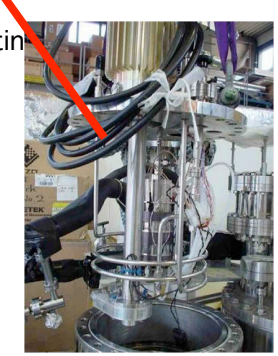
cryostat

honeycomb

- SIMIC problems (deformation, neglect)
- honeycomb pressure test failures (twice)







~900L kept

Tasks & Problems

- DC
  - gas leakage
  - build / rebuild the chambers
  - track reconstruction code still missing
- TC
  - much higher rate than expected - PMT life
  - fiber detectors (APD electronics) & laser system
  - redesign & build N2 bags
  - further tests/calibration at Frascatti
  - matching with DC tracks
- LXe
  - honeycomb window ready this week - pressure test
  - C-W will arrive earlier! - testing mid-April
- Trigger/DAQ
  - data rate limited at 5Hz (full detector) - toward 100Hz?
  - DRS3 probably not for 2007
- Computing
  - add more resources ~300kCHF - expect >50% paid by PSI
  - data size reduction (9MB/event)

Tasks & Problems

- DC
  - gas leakage
  - build / rebuild the chambers
  - track reconstruction code still missing

Ready in mid-June

- TC
  - much higher rate than expected - PMT life
  - fiber detectors (APD electronics) & laser system
  - redesign & build N2 bags
  - further tests/calibration at Frascatti
  - matching with DC tracks

Ready in mid-May
(N_2 bag by April)

- LXe
  - honeycomb window ready this week - pressure test
  - C-W will arrive earlier! - testing mid-April

Cryostat delivery in mid-April

- Trigger/DAQ
  - data rate limited at 5Hz (full detector) - toward 100Hz?
  - DRS3 probably not for 2007
- Computing
  - add more resources ~300kCHF - expect >50% paid by PSI
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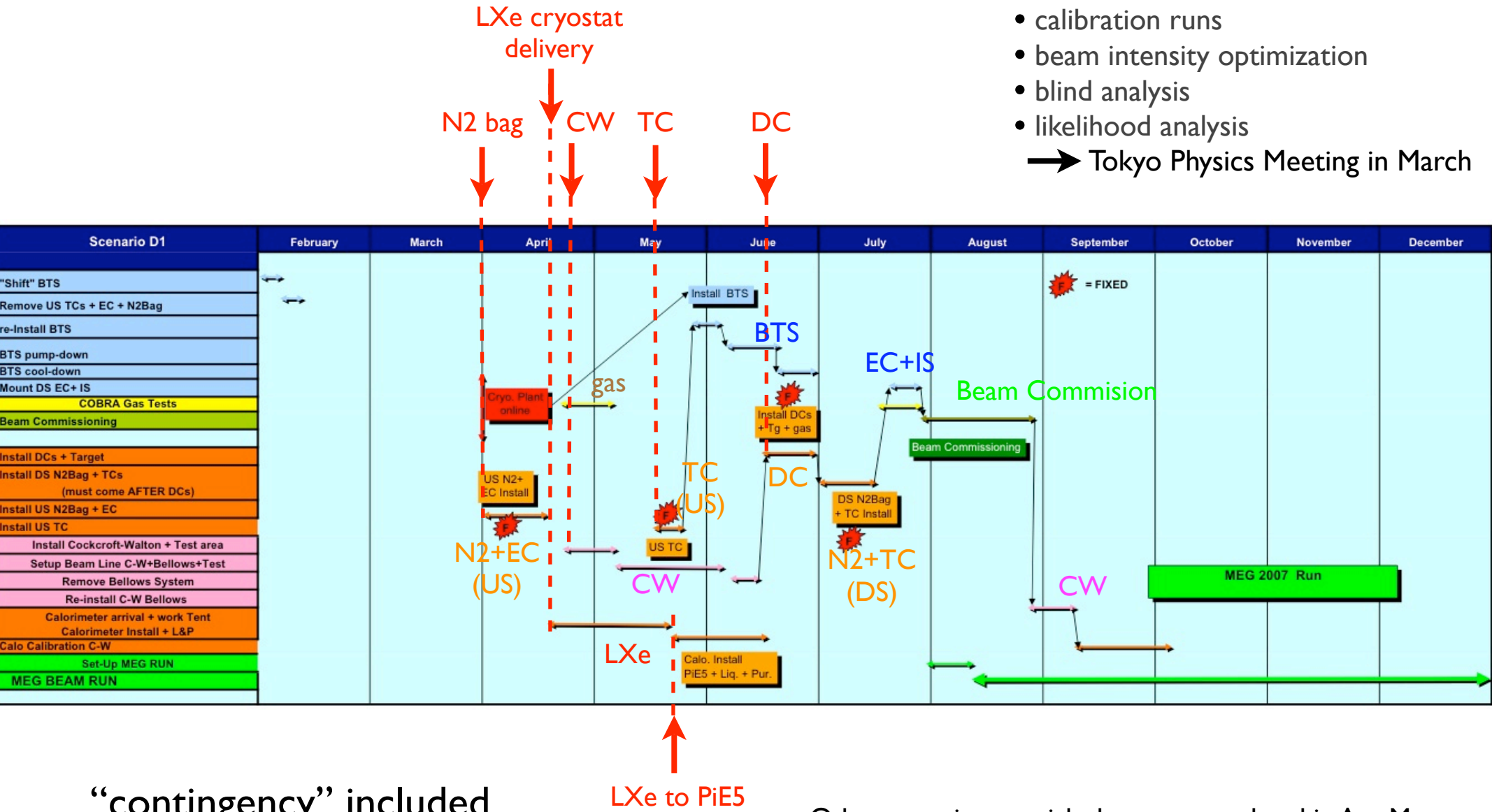
MEG schedule 2007

Running Strategy?

- calibration runs
- beam intensity optimization
- blind analysis
- likelihood analysis

→ Tokyo Physics Meeting in March



"contingency" included

Other experiment might be accommodated in Apr-May with minimum interference

MEG

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Hopeful for
full data taking in 2007

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without LXe detector

Background and Sensitivity

	Measured	Simulation
Gamma Energy (%)	4.5-5.0	
Gamma Timing	~0.15	
Gamma Position (mm)	4.5-9.0	
Gamma Efficiency (%)	>40	
e+ Timing (nsec)	0.1	
e+ Momentum (%)		0.8
e+ Angle (mrad)		10.5
e+ Efficiency (%)		90
Muon Decay Point (mm)		2.1
Muon Rate (10^8/sec)	0.25-0.35	
Running Time (10^7sec)	4.0	
Accidental Rate (10^{-14})	1.9-3.0	
# Accidental Events	0.6	
90% CL Limit (10^{-13})	0.9-1.4	

} needs reevaluation + info from '06 data

under intensive study with "2007 setup"

Updated number should be available after Physics Meeting in Tokyo, March 29-30